

## DIRECTIVES

## COMMISSION DIRECTIVE 2008/74/EC

of 18 July 2008

**amending, as regards the type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and access to vehicle repair and maintenance information, Directive 2005/55/EC of the European Parliament and of the Council and Directive 2005/78/EC**

(Text with EEA relevance)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Directive 2005/55/EC of the European Parliament and of the Council of 28 September 2005 on the approximation of the laws of the Member States relating to the measures to be taken against the emission of gaseous and particulate pollutants from compression-ignition engines for use in vehicles, and the emission of gaseous pollutants from positive-ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles <sup>(1)</sup>, and in particular Article 7 thereof,

Whereas:

(1) Following the change of scope of Directive 2005/55/EC introduced by Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information <sup>(2)</sup>, it is necessary to further amend this Directive by transferring the relevant technical requirements. Consequently, it is also necessary to amend Commission Directive 2005/78/EC <sup>(3)</sup>, which implements that Directive.

(2) As a consequence of the change of scope, it is necessary to introduce new requirements into the heavy-duty emissions legislation set up by Directive 2005/55/EC. These requirements include test procedures to enable type approval of heavy-duty engines and vehicles with petrol engines.

(3) In addition, it is necessary to introduce existing requirements for measuring the smoke opacity of diesel engines into Directive 2005/78/EC. This is due to the repeal of Council Directive 72/306/EEC of 2 August 1972 on the approximation of the laws of the Member States relating to the measures to be taken against the emission of pollutants from diesel engines for use in vehicles <sup>(4)</sup> as provided by Regulation (EC) No 715/2007.

(4) The measures provided for in this Regulation are in accordance with the opinion of the Technical Committee — Motor Vehicles,

HAS ADOPTED THIS DIRECTIVE:

*Article 1*

Directive 2005/55/EC is amended as follows:

1. Article 1 is replaced by the following:

*'Article 1*

For the purposes of this Directive the following definitions shall apply:

(a) "vehicle" means any motor vehicle as defined in Article 2 of Directive 70/156/EEC with a reference mass exceeding 2 610 kg;

(b) "engine" means the motive propulsion source of a vehicle for which type approval as a separate technical unit, as defined in Article 2 of Directive 70/156/EEC, may be granted;

<sup>(1)</sup> OJ L 275, 20.10.2005, p. 1.

<sup>(2)</sup> OJ L 171, 29.6.2007, p. 1.

<sup>(3)</sup> OJ L 313, 29.11.2005, p. 1. Directive as last amended by Directive 2006/81/EC (OJ L 362, 20.12.2006, p. 92).

<sup>(4)</sup> OJ L 190, 20.8.1972, p. 1.

(c) “enhanced environment-friendly vehicle (EEV)” means a vehicle propelled by an engine which complies with the permissive emission limit values set out in row C of the tables in Section 6.2.1 of Annex I.’

2. Annexes I, II, III and VI to Directive 2005/55/EC are amended in accordance with Annex I to this Directive.

#### Article 2

Directive 2005/78/EC is amended as follows:

1. Article 2 is replaced by the following:

##### ‘Article 2

Measures for the implementation of Articles 3 and 4 of Directive 2005/55/EC are laid down in Annexes II to VII to this Directive.

Annex VI shall apply for the purposes of the type approval of vehicles with compression-ignition engines and of such engines.

Annex VII shall apply for the purposes of the type approval of vehicles with spark ignition engines and of such engines.’

2. In point 1 of Annex V, Section 2 is replaced by the following:

‘Section 2: the number of the Directive — 2005/55/EC.’

3. Annexes VI and VII as set out in Annex II to this Directive are added.

#### Article 3

1. Member States shall adopt and publish, by 2 January 2009 at the latest, the laws, regulations and administrative provisions necessary to comply with this Directive. They shall forthwith communicate to the Commission the text of those provisions and a correlation table between those provisions and this Directive.

They shall apply those provisions from 3 January 2009.

When Member States adopt those provisions, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

#### Article 4

This Directive shall enter into force on the 20th day following its publication in the *Official Journal of the European Union*.

#### Article 5

This Directive is addressed to the Member States.

Done at Brussels, 18 July 2008.

For the Commission  
Günter VERHEUGEN  
Vice-President

ANNEX I

**Amendments to Directive 2005/55/EC**

1. Annex I is amended as follows:

(a) Section 1 is replaced by the following:

'1. This Directive applies to the control of gaseous and particulate pollutants, useful life of emission control devices, conformity of in-service vehicles/engines and onboard diagnostic (OBD) systems of all motor vehicles, and to engines as specified in Article 1 with the exception of those vehicles of category M<sub>1</sub>, N<sub>1</sub>, N<sub>2</sub> and M<sub>2</sub> for which type approval has been granted under Regulation (EC) No 715/2007 of the European Parliament and of the Council (\*).

From 3 January 2009 up to the dates specified in Article 10(2) of Regulation (EC) No 715/2007 for new approvals and in Article 10(3) of that Regulation for extensions, type approvals may continue to be granted under this Directive for vehicles of category N<sub>1</sub>, N<sub>2</sub> and M<sub>2</sub> with a reference mass below 2 610 kg.

(\* OJ L 171, 29.6.2007, p. 1.'

(b) In section 2.1, the following definitions are added:

'“reference mass” means the mass of the vehicle in running order less the uniform mass of the driver of 75 kg and increased by a uniform mass of 100 kg.

“mass of the vehicle in running order” means the mass described in Section 2.6 of Annex I to Directive 2007/46/EC.'

(c) The following point 4.5 is added:

'4.5. At the request of the manufacturer, the type approval of a completed vehicle given under this Directive shall be extended to its incomplete vehicle with a reference mass below 2 610 kg. Type approvals shall be extended if the manufacturer can demonstrate that all bodywork combinations expected to be built onto the incomplete vehicle, increase the reference mass of the vehicle to above 2 610 kg.'

(d) In point 6.2, the following subparagraphs are inserted after the fourth subparagraph:

'For petrol engines, the test procedures set out in Annex VII of Directive 2005/78/EC shall apply.

For diesel engines, the test procedure for smoke opacity in Annex VI of Directive 2005/78/EC shall apply.'

2. Annex II is amended as follows:

(a) In Appendix 1, the following points 8.4, 8.4.1, 8.4.1.1 and 8.4.1.2 are added:

'8.4. **Engine performances (for measurement of smoke opacity)**

8.4.1. Power at the six points of measurement referred to in paragraph 2 of Annex 4 of UN/ECE Regulation 24.

8.4.1.1. Power of the engine measured on the test bench: .....

8.4.1.2. Power measured on the wheels of the vehicle: .....

Engine speed (min <sup>-1</sup> )	Measured power (kW)
1. ....	.....
2. ....	.....
3. ....	.....
4. ....	.....
5. ....	.....
6. ....	.....

(b) The following Appendix 6 is added:

'Appendix 6

**Information required for roadworthiness testing**

- A. Measurement of carbon monoxide emissions (\*)
- 3.2.1.6. Normal engine idling speed (including tolerance) ..... min<sup>-1</sup>
- 3.2.1.6.1. High engine idling speed (including tolerance) ..... min<sup>-1</sup>
- 3.2.1.7. Carbon monoxide content by volume in the exhaust gas with the engine idling (\*\*) ..... %  
as stated by the manufacturer (positive ignition engines only)
- B. Measurement of smoke opacity
- 3.2.13. Location of the absorption coefficient symbol (compression ignition engines only): .....
4. TRANSMISSION (v)
- 4.3. Moment of inertia of engine flywheel: .....
- 4.3.1. Additional moment of inertia with no gear engaged: .....

(\*) Numbering of the information document is consistent with the numbering used in the Type Approval Framework Directive (2008/74/EC).

(\*\*) Specify the tolerance.'

3. Appendix 1 of Annex III is amended as follows:

(a) In Section 2, point 2.7.4 is replaced by the following:

'2.7.4. Particulate sampling

A single filter shall be used for the complete test procedure. The modal weighting factors specified in the test cycle procedure shall be taken into account by taking a sample proportional to the exhaust mass flow during each individual mode of the cycle. This can be achieved by adjusting sample flow rate, sampling time, and/or dilution ratio, accordingly, so that the criterion for the effective weighting factors in Section 6.6 is met.

The sampling time per mode shall be at least four seconds per 0,01 weighting factor. Sampling shall be conducted as late as possible within each mode. Particulate sampling shall be completed no earlier than five seconds before the end of each mode.'

(b) In Section 6, the following points 6.5 and 6.6 are added:

**'6.5. Calculation of the specific emission**

The particulate emission shall be calculated in the following way:

$$PT = \frac{PT_{\text{mass}}}{\sum_{i=1}^{i=n} P_i \times W_{fi}}$$

**6.6. Effective weighting factor**

The effective weighting factor  $W_{fei}$  for each mode shall be calculated in the following way:

$$W_{fei} = \frac{m_{sepi} \times q_{medf}}{m_{sep} \times q_{medfi}}$$

The value of the effective weighting factors shall be within  $\pm 0,003$  (0,005 for the idle mode) of the weighting factors listed in Section 2.7.1 of this appendix.'

4. In Appendix 1 of Annex VI, the following points are added:

1.5. Crankcase emissions test results: .....

1.6. **Carbon monoxide emissions test results**

Test	CO value (% vol)	Lambda (1)	Engine speed (min <sup>-1</sup> )	Engine oil temperature (°C)
Low idle test		N/A		
High idle test				

(1) Lambda formula: Appendix 1 to Annex IV

1.7. **Smoke opacity test results**

1.7.1. At steady speeds:

Engine speed (min <sup>-1</sup> )	Nominal flow G (litres/second)	Limit absorption values (m <sup>-1</sup> )	Measured absorption values (m <sup>-1</sup> )
1. ....	.....	.....	.....
2. ....	.....	.....	.....
3. ....	.....	.....	.....
4. ....	.....	.....	.....
5. ....	.....	.....	.....
6. ....	.....	.....	.....

1.7.2. Free acceleration tests

1.7.2.1. Engine test in accordance with Section 4.3 of Annex VI to Directive 2005/78/EC

Percentage of maximum rpm	Percentage of maximum torque at rpm stated m <sup>-1</sup>	Measured absorption value m <sup>-1</sup>	Corrected absorption value m <sup>-1</sup>

1.7.2.2. Under free acceleration

1.7.2.2.1. Measured value of the absorption coefficient: ..... m<sup>-1</sup>

1.7.2.2.2. Corrected value of the absorption coefficient: ..... m<sup>-1</sup>

1.7.2.2.3. Location of the absorption coefficient symbol on the vehicle: .....

1.7.2.3. Vehicle test according to section 3 of Annex VI to Directive 2005/78/EC

1.7.2.3.1. Corrected absorption value: ..... m<sup>-1</sup>

1.7.2.3.2. Rpm at start: ..... rpm

1.7.3. Stated net maximum power ..... kW at ..... rpm

1.7.4. Make and type of opacimeter: .....

- 1.7.5. Principal characteristics of engine type
  - 1.7.5.1. Engine working principle: four-stroke/two-stroke (\*)
  - 1.7.5.2. Number and layout of cylinders: .....
  - 1.7.5.3. Cylinder capacity: ..... cm<sup>3</sup>
  - 1.7.5.4. Fuel feed: direct injection/indirect injection (\*)
  - 1.7.5.5. Supercharging equipment YES/NO (\*)

(\*) Delete where not applicable (there are cases where nothing needs to be deleted when more than one entry is applicable).

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## ANNEX II

## 'ANNEX VI

**Measurement of smoke opacity**

## 1. INTRODUCTION

1.1. This Annex describes the requirements for measuring the opacity of exhaust emissions from compression ignition engines.

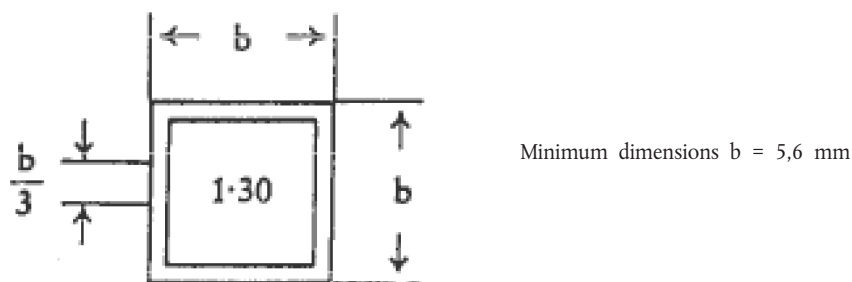
## 2. SYMBOL OF THE CORRECTED ABSORPTION COEFFICIENT

2.1. A symbol of the corrected absorption coefficient shall be affixed to every vehicle conforming to a vehicle type to which this test applies. The symbol shall be a rectangle surrounding a figure expressing in  $m^{-1}$  the corrected absorption coefficient obtained, at the time of approval, from the test under free acceleration. The test method is described in section 4.

2.2. The symbol shall be clearly legible and indelible. It shall be fixed in a conspicuous and readily accessible place, the location of which shall be specified in the Addendum to the type-approval certificate shown in Annex VI to Directive 2005/55/EC of the European Parliament and the Council (\*).

2.3. Figure 1 gives an example of the symbol.

Figure 1



The above symbol shows that the corrected absorption coefficient is  $1,30 m^{-1}$ .

## 3. SPECIFICATIONS AND TESTS

3.1. The specifications and tests shall be those set out in Part III, section 24, of UN/ECE Regulation No 24 (\*\*), with the exception described in section 3.2.

3.2. The reference to Annex 2 in paragraph 24.1 of UN/ECE Regulation No 24 shall be understood as reference to Annex VI to Directive 2005/55/EC.

## 4. TECHNICAL REQUIREMENTS

4.1. The technical requirements shall be those set out in Annexes 4, 5, 7, 8, 9 and 10 of UN/ECE Regulation No 24, with the exceptions described in Sections 4.2, 4.3 and 4.4.

4.2. Test at steady speeds over the full load curve.

4.2.1. The references to Annex 1 in paragraphs 3.1 of Annex 4 to UN/ECE Regulation No 24 shall be understood as references to Annex II of Directive 2005/55/EC.

4.2.2. The reference fuel specified in paragraph 3.2 of Annex 4 to UN/ECE Regulation No 24 shall be understood as reference to the reference fuel in Annex IV to Directive 2005/55/EC which is appropriate to the emission limits against which the vehicle/engine is being type approved.

- 4.3. Test under free acceleration.
- 4.3.1. The references to Table 2, Annex 2 in paragraph 2.2 of Annex 5 to UN/ECE Regulation No 24 shall be understood to refer to the table under point 1.7.2.1 of Annex VI to Directive 2005/55/EC.
- 4.3.2. The references to paragraph 7.3 of Annex 1 in paragraph 2.3 of Annex 5 to UN/ECE Regulation No 24 shall be understood as references to point 4 of Appendix 6 to Annex II to Directive 2005/55/EC.
- 4.4. "ECE" method of measuring the net power of C.I. engines.
- 4.4.1. The references in paragraph 7 of Annex 10 to UN/ECE Regulation No 24 to the Appendix to this Annex shall be understood as references to Annex II of Directive 2005/55/EC.
- 4.4.2. The references in paragraphs 7 and 8 of Annex 10 to UN/ECE Regulation No 24 to Annex 1 shall be understood as references to Annex II of Directive 2005/55/EC.

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(\*) OJ L 275, 20.10.2005, p. 1.

(\*\*) OJ L 326, 24.11.2006, p. 1.

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## ANNEX VII

**Requirements for the type-approval of s.i. engines fuelled by petrol**

## PART 1

**Carbon monoxide emission test**

## 1. INTRODUCTION

- 1.1. This appendix describes the procedure for the test, measuring carbon monoxide emissions at idling speeds (normal and high).
- 1.2. At normal engine idling speed, the maximum permissible carbon monoxide content in the exhaust gases is that stated by the vehicle manufacturer. However, the maximum CO content shall not exceed 0,3 % volume. At high idle speed, the carbon monoxide content by volume of the exhaust gases shall not exceed 0,2 %, with the engine speed being at least 2 000 min<sup>-1</sup> and Lambda being  $1 \pm 0,03$  in accordance with the manufacturer's specifications.

## 2. GENERAL REQUIREMENTS

- 2.1. The general requirements shall be those set out in sections 5.3.7.1 to 5.3.7.4 of UN/ECE Regulation No 83 (\*).
- 2.2. The manufacturer shall complete the table set out in Annex VI to Directive 2005/55/EC based on the requirements set out in point 2.1.
- 2.3. The manufacturer shall confirm the accuracy of the Lambda value recorded at the time of type-approval in section 2.1 as being representative of typical production vehicles within 24 months of the date of the granting of type-approval by the technical service. An assessment shall be made on the basis of surveys and studies of production vehicles.

## 3. TECHNICAL REQUIREMENTS

- 3.1. The technical requirements shall be those set out in Annex 5 to UN/ECE Regulation No 83, with the exceptions set out in section 3.2.
- 3.2. The reference fuels specified in paragraph 2.1 of section 2 of Annex 5 to UN/ECE Regulation No 83 shall refer to the appropriate reference to fuel specifications contained in Annex IX to Regulation (Euro 5 and 6 implementing Regulation).

## PART 2

**Verifying emissions of crankcase gases**

## 1. INTRODUCTION

- 1.1. This part describes the procedure for verifying emissions of crankcase gases.
- 1.2. When tested in accordance with this part, the engine's crankcase ventilation system shall not permit the emission of any of the crankcase gases into the atmosphere.

## 2. GENERAL REQUIREMENTS

- 2.1. The general requirements for conducting the test shall be those set out in section 2 of Annex 6 to UN/ECE Regulation No 83.

## 3. TECHNICAL REQUIREMENTS

- 3.1. The technical requirements shall be those set out in section 3 to 6 of Annex 6 to UN/ECE Regulation No 83.

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(\*) OJ L 70, 9.3.2007, p. 171.